Unmet needs in Cystic Fibrosis-related lung infection

Key points

- Cystic fibrosis (CF) is a life-limiting condition caused by a single defective gene, which causes breathing difficulties in patients, among many other symptoms.¹
- Lung infections can exacerbate CF symptoms and may result in death.²
- *Pseudomonas aeruginosa* is one of the most common and difficult to treat infections among people with CF.²
- One consequence of long-term antibiotic treatment is that these lung infections can become antibiotic-resistant.³
- Due to the burden placed on the patient, adherence to existing CF treatments is low.⁴
- New antibiotics active against chronic *P. aeruginosa* are urgently needed.

CF is a life-limiting condition caused by a single defective gene. This defect causes mucus to gather in the lungs and digestive system, which can make it difficult for people with the condition to breathe or digest food properly. About 75,000 people in the world have the condition, and about 1 in 25 people carry the cystic fibrosis gene - often without knowing.¹

People with CF are especially susceptible to infections, which exacerbate symptoms, accelerate the progression of lung disease and can result in death. Chronic infections of some bacteria, such as *P. aeruginosa*, can be particularly difficult to treat, as they form biofilms that are difficult for antibiotics to penetrate.²

The threat posed by *P. aeruginosa*

Currently, about 80% of adults with CF who have been tested (around 64,000 worldwide) have chronic *P. aeruginosa* infection.² Although *P. aeruginosa* is not the only infection that threatens CF patients, it is potentially fatal to people with the condition.² Previously, about half of people with CF would die within 5 years of the onset of *P. aeruginosa*, which meant that CF patients did often not survive into adulthood.²
However, *P. aeruginosa* can adapt to survive and withstand attack, thriving within the respiratory tract of CF patients for decades. If the *P. aeruginosa* forms into protective biofilm colonies, then it can also defend itself against antibiotics. Although people with CF are living longer, they are still prone to this debilitating and fatal infection, and greater choice in chronic treatment with antibiotic options may contribute to reducing antibiotic resistance among this group.

### Unmet treatment needs beyond the drug itself

As well as the difficulty in finding treatments that are effective against *P. aeruginosa*, some current therapies may be a burden on CF patients, as they require long inhalation times and have to be delivered frequently throughout the day, with short spaces between doses. As such, adherence to these treatments may be impacted.

Consequently, there is an unmet medical need for new antibiotic treatments active against *P. aeruginosa* that are effective, well-tolerated and that minimally impede on patients’ lives.

### References